

## ***Corymbia cadophora* subsp. *polychroma* (Myrtaceae): a new subspecies from the east Kimberley region of Western Australia**

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### **Abstract**

Barrett, R.L. *Corymbia cadophora* subsp. *polychroma* (Myrtaceae): a new subspecies from the east Kimberley region of Western Australia. *Nuytsia* 17: 31–36 (2007). A new subspecies of *Corymbia cadophora* K.D.Hill & L.A.S.Johnson is described from the east Kimberley region of Western Australia. The new subspecies, *Corymbia cadophora* subsp. *polychroma* R.L.Barrett, is only known from a single location where it grows on sandstone adjacent to a banded ironstone deposit on the western side of the Ragged Range. A key is provided to all three subspecies of *C. cadophora*.

### **Introduction**

The genus *Corymbia* K.D.Hill & L.A.S.Johnson was named and revised by Hill and Johnson (1995). The name *Corymbia cadophora* K.D.Hill & L.A.S.Johnson was published at the same time and two subspecies recognised: *C. cadophora* subsp. *cadophora* and *C. cadophora* subsp. *pliantha* K.D.Hill & L.A.S.Johnson. Hill and Johnson placed *C. cadophora* in their informal series *Ferrugineae* subseries *Cadophorosae*.

The two subspecies of *C. cadophora* recognised by Hill and Johnson (1995) were distinguished by flower colour, inflorescence structure and the size of the fruits. A specimen of *C. cadophora* was collected during flora surveys of a banded ironstone deposit in the Ragged Range by C. Slee in August 2004. The material, however, was infertile, so while recognised as a range extension for the species, it could not be placed in either subspecies. Further surveys by B. Barnett, M. Menz and the author in January and February 2005 located fertile material which could not be easily matched with either subspecies recognised by Hill and Johnson (1995). Further fruiting material was collected in July 2006. Morphological assessment of this material suggested that these collections represented a distinct taxon, here recognised at subspecific rank as *C. cadophora* subsp. *polychroma* R.L.Barrett. All three subspecies are endemic to the Kimberley region of Western Australia and have disjunct distributions.

### **Methods**

All material of *Corymbia cadophora* at PERTH was examined (67 specimens of subsp. *cadophora*, 10 specimens of subsp. *pliantha*). All measurements were taken from herbarium material.

Subspecies *cadophora* and *polychroma* have been observed in the field by the author. Precise localities are withheld due to conservation concerns. The distribution maps are based on the Interim Biogeographic Regionalisation for Australia Version 5.1 (Thackway & Cresswell 1995; Environment Australia 2000; Western Australian Herbarium 1998–) and were created using DIVA-GIS Version 5.2.0.2. (<http://www.diva-gis.org>) with coordinates from collections lodged at PERTH.

### Taxonomy

***Corymbia cadophora* subsp. *polychroma* R.L. Barrett, *subsp. nov.***

*Corymbiae cadophorae* subsp. *plianthae* K.D.Hill & L.A.S.Johnson affinis, sed trunco gracili; fructu gracili cum collo distincto; filamentis staminum subroseis et eburneis, vel eburneis, differt.

*Typus*: west of the Ragged Range, east Kimberley, Western Australia [precise locality withheld for conservation purposes], 30 January 2005, R.L. Barrett 3611 (*holo*: PERTH 07448945); *iso*: DNA, PERTH 07448953, PERTH 07448961).

*Corymbia cadophora* subsp. Argyle (R.L. Barrett 3610), Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au> [accessed May 2007].

*Straggling tree* to 4(5) m, scarcely branching. *Rhizomes* not recorded. *Bark* persistent throughout, grey-brown, thick, flaky, deeply tessellated and vertically fissured. *Cotyledons* not seen. *Juvenile leaves* not seen. *Intermediate leaves* not seen. *Adult leaves* opposite, weakly discolorous, bristle-free except for mid-vein of young growth, grey-green, ovate to oblong, connate, 90–205 mm long, 49–102 mm wide, sessile; venation not neotenous; intramarginal vein distinct, within 0.7 mm of margin, or confluent with margin; oil glands sparse, superficial. *Branchlets* pruinose when mature, young growth with bristle glands, otherwise glabrous. *Inflorescence* with 3–7 internodes on main axis. *Umbellasters* 3–17 per inflorescence, 7–9-flowered; peduncles terete or slightly winged, 7.9–27.4 mm long; pedicels thick, to 5 mm long. *Mature buds* bright pink or deep reddish pink, usually pyriform, occasionally ovoid, not setose or scurfy, 18–26 mm long (including cap), 8.1–10.7 mm diameter; calyptra 4.3–7.2 mm long, slightly shorter than the hypanthium, shallowly hemi-spherical with a conical apex. *Staminal filaments* numerous, cream or pale pink at the base. *Fruits* ovoid, urceolate, usually distally narrowed or constricted below top, neck to 6.0 mm long, smooth, 17.7–22.6 mm diameter, 30.1–38.3 mm long, 3- or 4-locular; disc 3.7–6.6 mm wide. *Seeds* not seen. (Figure 1)

*Other specimens examined*. WESTERN AUSTRALIA: [precise locality withheld] type locality, 13 July 2006, B. Barnett s.n. (CANB, DNA, NSW, PERTH); type locality, 2 Feb. 2005, B. Barnett & M. Menz s.n. (PERTH); type locality, 2 Feb. 2005, R.L. Barrett 3610 (PERTH, CANB).

*Distribution and habitat*. Known only from the type locality over a distance of about 2 km, in the Ragged Range, East Kimberley (Hall District), where it grows on gentle sandstone slopes over *Triodia* spp. adjacent to an outcropping banded ironstone deposit (Figure 2).

*Phenology*. Flowering recorded for January, February and July. Seed fallen from fruit collected in July.



Figure 1. *Corymbia cadophora* subsp. *polychroma*. A – habit (R.L. Barrett 3610); B – cream and pink flowered form (holotype: R.L. Barrett 3611); C – fruit (B. Barnett s.n., PERTH 07448937); D – cream flowered form (R.L. Barrett 3610). Scale = 1 cm (C).



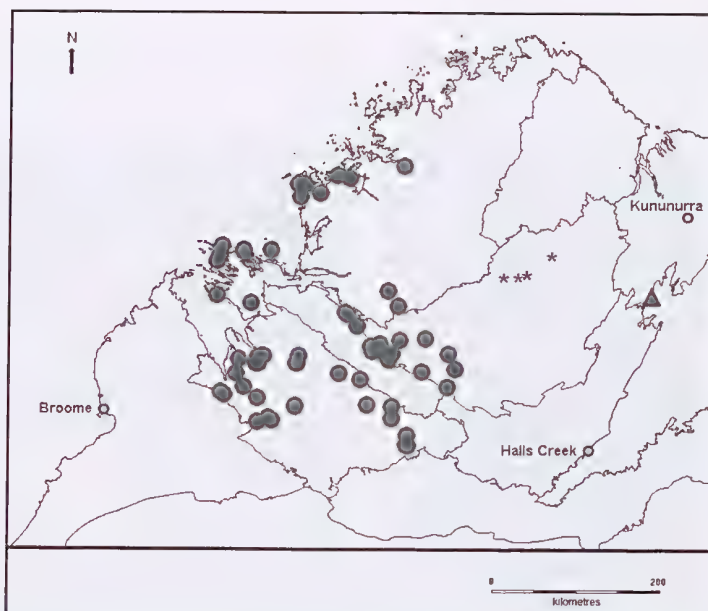


Figure 2. Distribution of *Corymbia cadophora* subsp. *cadophora* (●), *C. cadophora* subsp. *pliantha* (\*) and *C. cadophora* subsp. *polychroma* (▲) in northern Western Australia, based on PERTH specimen data.

**Conservation status.** Recently listed as Priority One under Department of Environment and Conservation (DEC) Conservation Codes for Western Australian Flora. Known only from a single location where it may be impacted by proposed mining activities. Estimated population size of 500+ plants. Possibly more widespread in the region, but further surveys are required.

**Etymology.** From the Greek *poly-* (many) and *-chromus* (coloured) in reference to the marked variation in flower colouration.

**Notes.** This taxon was first observed at the type locality by Conrad Slee in August 2004, however no fertile material could be found at that time. Levels of fruit set appear to be highly dependent on seasonal conditions. Scattered flowering and very poor fruit-set was observed by the author in February 2005, followed by improved fruit set in July 2006 (B. Barnett, pers. comm.). Individual plants had flowers of consistent colour form, either with the staminal filaments cream and pink and buds pink (Figure 1B) or staminal filaments purely cream and buds deep reddish pink (Figure 1D).

*Corymbia cadophora* subsp. *polychroma* is in many respects intermediate between subsp. *cadophora* and subsp. *pliantha*: in flower colour, showing variation relating to both subspecies; in fruit size being closer to subsp. *pliantha*; in number of umbellasters per inflorescence, probably closer to subsp. *cadophora*. In plant habit, it is more similar to subsp. *pliantha*. The fruits of subsp. *polychroma* are narrower than both subspecies. The constricted neck on the fruit is far more prominent on subsp. *polychroma* than subsp. *pliantha* and is sometimes entirely absent from subsp. *cadophora*. Leaves are broader than subsp. *pliantha*, and generally broader than subsp. *cadophora*. The combination of characteristics is however unique, and not strictly intermediate, and being geographically disjunct from both subspecies (170 km to subsp. *pliantha* and 250 km to subsp. *cadophora*) and not known to occur between the two (150 km between subsp. *pliantha* and subsp. *cadophora*) it is here considered to be best recognised as a novel subspecies.

Other *Corymbia* species recorded in surrounding habitats are *C. aspera* (F.Muell.) K.D.Hill & L.A.S.Johnson, *C. bella* K.D.Hill & L.A.S.Johnson, *C. confertiflora* (F.Muell.) K.D.Hill & L.A.S.Johnson, *C. dichromophloia* (F.Muell.) K.D.Hill & L.A.S.Johnson, *C. drysdalensis* (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson, *C. ferruginea* subsp. *stypophylla* K.D.Hill & L.A.S.Johnson and *C. polycarpa* (F.Muell.) K.D.Hill & L.A.S.Johnson. It is noted here that *C. dichromophloia* and *C. drysdalensis* (both *sensu* Hill & Johnson 1995) occur in close proximity to each other and are readily distinguished by their young crown growth; distinctly silvery in *C. drysdalensis*. This is in contrast to the treatment of the two as forms of a single variable taxon by Slee *et al.* (2006).

### Key to subspecies of *Corymbia cadophora*

1. Staminal filaments entirely deep red or dark pink; umbellasters 7–23 per inflorescence; fruit 25–36 × (15)22–26 mm, often lacking a distinct neck .....subsp. **pliantha**
- 1: Staminal filaments cream or cream and pink; umbellasters 3–17 per inflorescence; fruit 30–42 × 18–30 mm .....2
2. Staminal filaments completely cream (?occasionally pink); umbellasters usually < 10 per inflorescence; fruit 25–36 × 22–26(38) mm, usually lacking a distinct neck; trunk robust, branches usually widely spreading, tree mostly broader than high .....subsp. **cadophora**
- 2: Staminal filaments either pink at the base or cream; umbellasters 3–17 per inflorescence; fruit 30–38 × 18–23 mm, usually with a distinct neck; trunk slender, tree usually as high or higher than broad..... subsp. **polychroma**

### Notes on *C. cadophora*

The description of *C. cadophora* needs to be adapted to include the following character states found in subsp. *polychroma*, that are not accounted for by Hill and Johnson (1995). Umbellasters 7–9-flowered; stamens variously cream, cream and pink, pink or red. The adult leaves are nearly, but not completely bristle-free, with sparse bristle-hairs occurring on the midrib in all subspecies.

The flowers of *C. cadophora* subsp. *pliantha* are illustrated by Brooker and Kleinig (1994) as *Eucalyptus* sp. LL, with the remaining photographs appearing to represent subsp. *cadophora*. Both subsp. *cadophora* and subsp. *pliantha* are illustrated in the third edition of *Euclid* (Slee *et al.* 2006).

The description of *Eucalyptus* sp. J in Rye (1992) refers to specimens of both subsp. *cadophora* and subsp. *pliantha*, but does not include any material of subsp. *polychroma*.

### Notes on subspecies *cadophora*

The specimen *P.R. Foulkes* 341 (PERTH) has broader leaves than recorded by Hill & Johnson (1995), to 135 mm wide. *P.G. Wilson* 11428 (PERTH) has orbicular fruit to 38 mm wide. Most collections lack hairs on the young (adult stage) growth, however *K.F. Kenneally* 11046 (PERTH) does have dense hairs on the young stems and a few hairs on the midrib of the young (adult stage) leaves. A collection from Koolan Island (*G.J. Keighery* & *N. Gibson* 95, PERTH) was recorded as having smooth white bark and being locally common around the old townsite. The leaf and fruit material collected is typical of subsp. *cadophora* and there are other collections from the island with normal fibrous grey bark. Field observations at the location of the *Keighery* & *Gibson* collection by Conrad

Slee (pers. comm.) have failed to relocate any white-barked plants and the bark type was probably confused with a co-occurring white-barked eucalypt.

### Notes on subspecies *pliantha*

Little good fertile material exists of this subspecies at PERTH, making observations of general floral arrangement difficult, however it is noted that the number of umbellasters varies from 7 (*M.I.H. Brooker* 11581 and *K. Coate s.n.*, PERTH 1395718) to about 23 (*K. Menkhorst* 1071). The collection *S.J. Forbes* 2279 (PERTH) has smaller fruit than usual, to 26 mm long and 15 mm wide, with a distinct neck and are possibly not fully developed but do appear to be mature. The duplicate of *S.J. Forbes* 2279 at CANB has slightly larger attached fruit (c. 28 mm long and 17 mm wide) with a short neck, and young growth does have setose hairs present on the stems and a few on the midrib of the leaves (*A. Slee*, pers. comm.).

### Acknowledgments

I would like to thank Conrad Slee (*ecologia*) for first bringing subsp. *polychroma* to my attention, for collection of material, and for observations of subsp. *cadophora* on Koolan Island, Belinda Barnett and Myles Menz (*ecologia*) for collections and field observation of subsp. *polychroma*, Alex George for correcting the Latin diagnosis, Andrew Slee for comments on specimens at CANB, Matt Barrett for comments on the manuscript and Kelly Shepherd for assistance with producing the distribution map.

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